

WHAT IS CLAIMED IS:

1. A voltage controlled oscillating circuit operable to output a variable frequency, comprising a variable capacitance element, the variable frequency varying with a variation in capacitance of the variable capacitance element, wherein

the variable capacitance element is provided by a bipolar transistor,

the capacitance of the variable capacitance element is achieved by combining capacitance formed by a PN junction between an emitter layer and a base layer and capacitance formed by a PN junction between the base layer and a collector layer in a bipolar transistor, and is controlled by a voltage applied between the emitter layer and the collector layer of the bipolar transistor.

2. A voltage controlled oscillating circuit operable to output a variable frequency, comprising a variable capacitance element, the variable frequency varying with a variation in capacitance of the variable capacitance element, wherein

the variable capacitance element is provided by a bipolar transistor,

the capacitance of the variable capacitance

element is achieved by capacitance formed by a PN junction between a collector layer and a base layer in the bipolar transistor, and is controlled by a voltage applied between an emitter layer and the collector layer of the bipolar transistor.

3. The voltage controlled oscillating circuit according to claim 1, wherein a junction area between the emitter layer and the base layer is larger than a junction area between the emitter layer and the collector layer.

4. The voltage controlled oscillating circuit according to claim 1, further comprising a bias circuit which applies a voltage for controlling the capacitance, in the emitter layer.

5. The voltage controlled oscillating circuit according to claim 2, further comprising a bias circuit which applies a voltage for controlling the capacitance, in the emitter layer.